DOCUMENT RESUME

ED 469 787 CE 080 737

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TITLE	Towards a New Theory of Gender Inequities in Labour Market Outcomes of Education.
PUB DATE	2000-03-00
NOTE	19p.; Paper presented at the Annual Meeting of the Western Research Network on Education and Training (4th, Vancouver, British Columbia, March 24-25, 2000).
PUB TYPE	Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Career Choice; Comparative Analysis; Education Work Relationship; *Educational Attainment; *Employed Women; Employment Level; Employment Patterns; *Equal Opportunities (Jobs); Foreign Countries; Human Capital; *Individual Differences; Influences; *Labor Market; Occupational Mobility; Outcomes of Education; Postsecondary Education; Productivity; Promotion (Occupational); *Salary Wage Differentials; Sex Differences; Sex Discrimination; Sex Fairness; Social Theories; Theory Practice Relationship
IDENTIFIERS	Canada; Economic Theory; Human Capital Theory; *Return on Investment

ABSTRACT

Attempts to explain sex-related wage differentials generally rely on the human capital and segmentation labor market theories. The human capital theory explains individuals' position in the labor market primarily in terms of factors determining their productivity, whereas segmentation theory focuses on differences among jobs as determinants of the distribution of income. The two theories are often presented as competing because the former emphasizes differences among people that determine their productivity, whereas the latter considers job characteristics. A new model that considers the two theories as complimentary rather than competing was developed and used to analyze the wages of adults who are employed full-time in a single job in Saskatchewan. Of the 25,000 records that fit the selection criteria, 1,000 were randomly selected for a working data file. The subsamples, which consisted of records for 525 men and 475 women, were analyzed with respect to the following wage-determining variables: age, marital status, educational level, type of economic family, age of youngest child, job tenure, public/private-employee status, industry, occupation, unionization, and firm size. The analysis established that the two dominant labor market theories taken together do a better job of explaining men's wages than women's. Wage determination models using the women-only and men-only subsamples are appended. (Contains 23 references.) (MN)

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Towards a New Theory of Gender Inequities in Labour Market Outcomes of Education.

Liz Quinlan

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Western Research Network on Education and Training,
Fourth Annual Conference

March 2000

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Introduction

Women's labour market participation has increased dramatically over the past several decades, and in fact, among the industrialized nations, Canada now has the highest female work force participation rates, second only to Sweden (Krahn & Lowe, 1997). In addition to entering the labour market in droves, women are acquiring higher levels of education. Women make up over half of all post-secondary enrollments and graduates. In 1997, they obtained 58% of all university degrees and diplomas (Statistics Canada, 2000). Despite women's now-higher levels of post-secondary education in comparison to men's, a wage differential between the sexes remains.

The United Nations 1995 Human Development Report, which ranked 55 countries around the world on their economic and political treatment to women, found Canada's performance exceptionally good on such scales as women's share of parliamentary seats, professional and managerial positions and income levels, but especially poor on the wage gap between men and women - here Canada was ranked 47th out of 55 (Stackhouse, 1995). Although the gendered wage gap over the past three decades has narrowed in Canada, it still remains at approximately 64% (Statistics Canada, 1999).

Researchers from a variety of disciplines have been challenged to apply relevant theories and methodologies to understand these gender differences in the reward structures of the labour market. Sociologists interpret these different returns on education investments as yet another feature of the emerging patterns of inequality in the post-industrial economy (e.g. Livingstone, 1998). Neo-classical economists understand education as a form of human capital in which individuals invest with the aim of maximizing their return in the labour market. Identical human capital investments are assumed to result in identical productivity levels, and therefore equal earnings.

The aim of this paper is to first review the two dominant labour market theories: Human Capital Theory and Segmentation Theory. Second, a wage-determination model, which considers the two theories as complementary, rather than as competing, is presented to reveal some interesting gender differences. Finally, the theories are explored to determine what light each can cast on the issue of returns to education. It is found that for a satisfying explanation of the gender inequities in labour market outcomes of education we must look beyond prevailing theories.

Economic Theory

Human Capital Theory, explains an individual's position in the labour market primarily on the basis of the endowments which determine the individual's productivity. Analogous to

investments in physical capital, individuals are thought to make rational choices about 'investing' in their productivity-enhancing capacities using the techniques of cost-benefit analysis. If the benefit of increased income, derived from increased capacities, is greater than the costs, an individual will make the investment in their own human capital. Individuals are assumed to have 'perfect knowledge' of the costs and the benefits associated with each occupational choice.

Individuals invest in their human capital, including levels of formal education, according to what will maximize a return in the labour market. The amount of available human capital determines an individual's productivity. In turn, productivity levels determine earnings, one of the most important labour market outcomes. Identical investments in human capital are generally considered to result in identical earnings. Differences in the human capital investments made by men and women are thought to explain the differences in pay between the sexes. On average, women spend less time in the paid labour force than men, and thus are not able to reap the rewards from longer years of service. Related to job tenure is the presence of children. Women's child-care responsibilities reduce their time in the labour market and contribute to interrupted work histories. Anticipating their more limited labour market participation, the theory suggests that women have less incentive to make human capital investments.

Acknowledgment is made to other, 'pre-market' conditions which create differences in productivity levels between men and women, and therefore differences in earnings. Because the majority of household work is done by women, women often have less energy to offer the job, and this diminishes their productivity. In addition to the unequal distribution of domestic responsibilities, women's subordinate role in the family means that they are often less inclined to relocate to pursue better jobs, and therefore, women miss out on important wage-enhancing opportunities (Becker, 1985, cited in Duncan 1996). The impact of these gender differences on productivity is not well-developed within the theory. The gendered division of domestic responsibilities is still categorized as a 'pre-market' factor, and thus remains largely untheorized within the paradigm of neo-classical economics. In general, the theory points to gender differences in human capital investments to explain the gap between the pay of men and women.

Sociological Theory

Labour market segmentation theory, an outgrowth of sociological studies of urban American blacks in the early 1960s, focuses on the structural barriers inherent in labour markets. The theory suggests that the need for control over the labour process results in a segmented process, which in turn gives rise to a segmented labour market (Edwards, 1979). Workers are assigned to

the different market segments as a strategy to reduce workers' solidarity, although not necessarily by the conscious design of individual employers. Visible attributes, such as race, sex and age, are used as differentiating tools. The general acceptance of the relative inferiority of members of these groups translates into notions of lower productivity and aptitude, and this provides the economic justification for these groups to be relegated to secondary markets (Barron & Norris, 1976).

Recent theorists view market segmentation as a matter of degree, that is, some labour markets are more segmented than others and market segments cut across industries, although particular industries might be more typically found in one market than in others. Although these recent versions insist on less rigid differentiations, its original conception referred to the labour market segments as the *primary* and *secondary markets*, and for the purposes of analysis the following characterization of each of these two markets is useful.

The *primary market* is characterized by long tenure, low unemployment rates, relatively high wages, and specialized education requirements. Workers entering these internal markets at the bottom rung, and climbing up firms' job ladders satisfy the need for coordination and control in large organizations. With less dependency on the external labour market, these firms are less susceptible to market fluctuations. The independent primary market is marked by occupational or professional standards, and offers the incentives of job security and promotion prospects in exchange for identification with the job, education credentials, and experience (Edwards, 1979).

The *secondary labour market* is characterized by low wages, high-turnover, high absenteeism, and low-skill requirements. Members of this market segment include non-unionized, migrant, and agricultural workers. Generally, employment offers little security, and in exchange, workers are not expected to demonstrate the same degree of commitment to their employment as their counterparts in the primary segments.

Most essential to our discussion of educational outcomes, is the discrepancy between the labour market segments in how increased levels of education are rewarded with correspondingly increased levels of pay. In the primary labour market educational qualifications are correlated with skill and autonomy requirements of jobs, and are rewarded monetarily. In the secondary labour market, however, the return on investments in human capital is less evident. Moreover, secondary labour market workers are unable to improve their economic position by acquiring additional education (McNabb, 1985). Thus, the Human Capital Theory operates for those above the threshold, that is in the primary labour market, but does not operate for those below the threshold (Karabel & Halsey, 1977). Women's confinement to the secondary labour market explains their limited returns on their education investments.

Complementary, not competing theories

Human Capital Theory and Labour Market Segmentation and are often presented as competing theories. Whereas the former emphasizes differences among people, the latter considers differences among jobs, as a determinant of the distribution of income (Dickens & Lang, 1985). Put another way, Human Capital Theory, with its focus on individuals, highlights the agency of labour market participants, whereas Segmentation theory attends to the structures of the market. Given this basic difference in perspective between the two dominant theories, it is little wonder that they also differ on the role that education has in explaining how the labour market operates (McNabb, 1985). Underpinning Human Capital Theory is the notion that education is the vehicle of social equality. By improving cognitive abilities, education increases productivity and therefore social status. "Workers in low-wage jobs are viewed simply as low-productivity workers who are unwilling or unable to obtain the skills that are necessary for access to higher paying jobs." (Dickens & Lang, 1985, p.792) Segmentation theory, on the other hand, lines up with the critical education theorists. On this view, education is a vehicle of social stratification. Since education reinforces the class structure, there is no reason to expect equality in rates of return from investments made in education (Bowles & Gintis, 1975, p. 80). For these theorists, education has little impact on earnings, when social class is taken into account.

Neither theory provides a complete account. Despite these obvious differences in focus between the theories, to view them as complementary might prove fruitful. Taken together the theories provide a more comprehensive understanding of the processes which shape labour market outcomes. The social structures, as described by the labour market segmentation theory, circumscribe the extent to which individuals' human capital investments influence labour market location. That is, individuals make their human capital investment decisions within the bounds of the structural constraints. By considering the two theories as complementary and combining them in a model, it is possible to identify some gender differences in the explanatory power of each of the two theories. The results of a structural equation model, using sub-samples of wage-determination data for men then women, are described below.

A wage-determination model

Adhering to the Human Capital Theory, we include the following characteristics of the individual employee which determine wages: job tenure, education, and age. Age is taken as a proxy for work experience. Less common, but still relevant, are variables such as marital status, type of economic family, and age of youngest child. Since these variables affect the motivation, and therefore the productivity, of the employee, they are added to the standard list of human

capital variables to form a more comprehensive list of employees' characteristics. These variables are grouped together in a factor labelled 'employees' characteristics'.

To incorporate the Segmentation Theory in the model, we consider the job characteristics, which are thought to have an effect on wages: type of occupation and industry, degree of unionization, and size of workplace. All these variables are grouped together in a factor labelled 'job characteristics'. Both employee and job variables, combined, are taken to be the model of wage-determination.

The data

Each year the results of Statistics Canada 12 monthly labour force surveys are amalgamated into one composite, yearly file. The 1998 file was obtained for the analyses outlined in this section. Records were selected according to the following criteria: adult, single-job-holders in the province of Saskatchewan, employed full-time, and not self-employed. This selection resulted in a data file containing approximately 25,000 records, from which 1,000 records were randomly selected to form a working data file. Two sub-samples were created: one containing 525 men, the other 475 women. For each of the 1,000 records, the following wage-determining variables were included in the working data file: age, marital status, educational level, type of economic family, age of youngest child, job tenure, public/private-employee status, industry, occupation, unionization, and size of firm. Instead of the wage rate, the natural log of the wage rate is used as the dependent variable in order to achieve a more normal distribution.

The results

The sex-specific sub-samples were applied to the model separately (Appendix A and B). The comparative fit index (CFI) is a goodness-of-fit index, used to measure how well the data corresponds to the model: in this case, how well the variables listed determine the wage rate for men and women. The index ranges from 0 to 1, where 1 is a perfect fit. By not reflecting inter-relationships that must exist among the independent variables, this model is the simplest of wage-determination models. A more realistic model, with the appropriate inter-relationships, will yield a better fit (i.e. a higher CFI value). The development of a more complicated model is outside the scope of the paper and is left for future research. Nevertheless, the difference in CFI for men compared to women of this simple model is significant. It suggests that the model offers greater explanatory power when applied to men in comparison to women. The CFI is .58 for the men-only sub-sample, compared to .45 for the women-only sub-sample. We conclude that the available theories, taken together, do a better job at explaining men's wages than they do women's. Looking more closely at the details of the model, we see that for both men and women, marital status and type of economic family do not significantly contribute to the determination of wages.

All five of the job characteristics have a significant influence on both men's and women's wages; however, taken together, the job characteristics negatively affect women's wages more so than men's (-.57 compared to -.26). Conversely, the employee characteristics, taken together, positively affect men's wages more so than women's (.25 compared to .12). Yet, the positive influence of education (the employee characteristics which is of particular interest) is significant for women, but not for men. These gender differences in the reward structures of the labour market as interesting as they are, cannot be taken as conclusive since the model is based on only one data set. The weight of each of these variables may differ considerably with different data sets. Further work needs to be done in applying several data sets to the model. The next section picks up the theoretical discussion of the gender differences in the reward structures of the labour market, in particular the inequalities in the returns to education.

Human Capital Theory's difficulty with the gendered pay gap

Gender differences in human capital investments are diminishing in Canada, particularly levels of acquired formal education (Gunderson, 1998). On average women's level of attained post-secondary education is actually now higher than men's, as noted above. Although women continue to be under-represented at the graduate level and in those fields historically dominated by men, growth rates paint an encouraging picture. Women's growth rates are substantially higher than men's at all levels of study and as the level of study increases women's growth rates increase more sharply than men's. Moreover, it is precisely those fields of study which have historically attracted very few women that have experienced the greatest rates of growth, e.g. engineering (Quinlan, 1998)

Despite women's rising levels of education, which has produced an increasing similarity between men's and women's human capital characteristics, the pay gap remains. Taking all earners together, in 1997, for every dollar earned by Canadian men, women earned 63.8 cents. Among full-time, full-year employees the earnings gap is considerably less: for every dollar earned by men, women earn 72.5 cents (Statistics Canada, 1999). The pay gap between men and women tends to narrow as the level of education increases. Although, this is not always true; Drolet (1999) finds the ratio of women's to men's wages drops from 85% to 81% as the level of education increases from a bachelor degree program to a graduate program.

That men's and women's human capital investments have become similar has contributed to the narrowing of the wage gap (Gunderson, 1998). Yet, there remains a portion of the pay differential which cannot be explained by differences in human capital investments. Various econometric studies have quantified this portion of the difference in pay between men and

women.[1] Gunderson's (1998) examination of the gendered earnings gap revealed that 70% of the earnings gap cannot be explained by differences in observable human capital characteristics. Most recently, Drolet (1999) found that between one half and three quarters of the gender wage gap cannot be attributed to differences in the human capital characteristics of Canadian men and women. In particular, differences in education attainments between men and women contribute very little to explaining the wage gap. According to Drolet's analysis, gender differences in education level and field of study account for between 3.2% and 4.5% of the gender wage gap, depending on how many other variables are controlled for.

The existence of the 'unexplained' portion of the pay differential suggests that there are the different payment rules for men and women who have the same human capital investments. Wage discrimination has been defined as the "valuation in the labour market of personal characteristics of the workers that are unrelated to productivity" (Ehrenberg & Smith, 1988, p. 534). Within economic theory, personal prejudice and statistical discrimination are the standard explanations for wage discrimination. Nevertheless, each of these explanations has difficulty accounting for the persistence of wage discrimination. First, discriminatory firms sacrifice profits by restricting their hiring to only one sector of the labour market. In a truly competitive market this would gradually drive them out and the profit-maximizing, non-discriminatory firms would eventually dominate the market. Second, as women's productivity-determining characteristics have become more like men's, as they have in recent years, making decisions on the basis of statistical discrimination becomes more inefficient and costly. And again, by penalizing those firms continuing to practice statistical discrimination, the market would limit the occurrence of wage discrimination. (Ehrenberg & Smith, 1988)

In sum, it appears that economic theory is unable to provide a satisfactory account of the gendered differential in such a fundamental labour market outcome as wages. It has a good deal of difficulty explaining its existence of differences in pay among those with equivalent productivity-determining characteristics, although it is able to quantify this portion of the wage. However, there is an aspect of the theory worth salvaging. It seems a reasonable supposition that women's domestic responsibilities, which result in interruptions and reduced accumulated work experience, would negatively affect on their wages. Feminist theorists as far back as Charlotte Perkins Gilman have recognized the limitations women's domestic responsibilities impose on their ability to participate in paid work. While the sexual division of labour in the home is not a

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[1] The results of these econometric studies vary depending on which measure of income is used, earnings or wages, and which set of human capital investments, or 'productivity-related characteristics', are used. Although there is no universally accepted set of characteristics, all studies include level of education and work experience, and many include field of study, marital status and age of youngest child.

complete explanation of women's subordinate position in the labour market, its effect on the structuring of employment can not be denied. As noted above, this aspect is not well-developed within economic theory, yet it is crucial to any understanding of women's labour market outcomes.

Segmentation Theory's difficulty with women's location

At first glance, the primary and secondary markets do indeed appear to be carved out along gender lines, and this would indeed account for women's lower rate of returns on education investments. To satisfy the desire for increased flexibility in production, employers rely on secondary labour markets. In turn, this type of employment affords women the flexibility to more easily combine employment and domestic responsibilities. In the current political climate of neoliberalism, the demands of women's unpaid work has increased. Adequate, affordable child-care is no longer even a promise, health care is under siege, and a whole range of social services are now privatized. Women need the flexibility afforded by secondary labour market jobs more than ever in order to carry out their domestic responsibilities.

Despite the obvious correlation of gendered occupational segregation to labour market segmentation, there are difficulties with the assumption that women are part of only the secondary market. First, women are present in the primary labour market. According to the 1996 census women accounted for 53% of management, finance and science occupations, the aggregate occupational clusters which are the most obvious connection to the primary market (Statistics Canada, 1998). It can be argued, rightfully, that this is a crude measure of the primary labour market as these clusters contain a wide range of jobs. Taking out the highly sex-segregated clerical and secretarial categories contained within these clusters, we find that women accounted for 35% of the management, finance and sciences occupations. Even this is a significant presence.

Second, there appear to be very marked differences in the shape and nature of the labour markets segments for women compared to men. Krahn & Lowe (1997) find that even within these occupational clusters of the primary market, women still tend to be clustered in jobs with the least responsibility and lowest pay, jobs which are closer to those of the secondary labour market. Moreover, the trend of women entering managerial and professional occupations must be interpreted in light of the prevailing organizational trend towards flattening of hierarchies. This sharply reduces the promotion potential for women who are just entering the bottom rung of managerial occupations (Acker, 1992). Thus, women's career trajectories in managerial occupations will be different from that of men's.

Finally, women's location in the primary market has historically been connected to the

expansion of public sector jobs, quite unlike men's. As downsizing within Canada's public sector continues, women's position in the primary market is more severely affected in comparison to men's. In sum, while it is not the case that women are absent in the primary labour market, the characteristics of their employment in the primary labour market are different from that of men's. In general, the differences in men's and women's employment patterns do not correspond precisely to the differences between the primary and secondary labour markets. Siltanen (1994) summarizes the difficulty in associating gender with labour market segments: "the fact that stratification fault lines run through predominately female and male jobs, as well as between them, has created difficulties in establishing the precise significance of gender-skewed job distributions in explanations of employment inequalities" (p. 120).

To better conceptualize the relationship between gender and labour market segments, then, we need to consider gender as an additional, equally important, dimension of the analysis, as illustrated by the following matrix.

Sex / Market	Men	Women
Primary		
Secondary		

The matrix captures the distinction between the differences *within* the gender categories as well as the differences *between* the genders. While much of the research on women's labour market participation has focused on the differences between women and men's employment patterns, this 2x2 analytical tool reminds us that there is diversity within women's employment. The matrix is a theoretical construct, reinforcing our notion that horizontal and vertical separations between sections of the labour market are logically distinct; however, in practice they act on each other in a dynamic way. Theory which adequately explains women's labour market outcomes must address this dynamic relationship between sex-segregation and labour market segmentation.

Directions for future research

One of the contributions of the 'feminist critique' of sociological theory was to demonstrate the legitimacy of gender as a category of analysis. Having won the argument over the importance of gender, there is now a need to look beyond the generalized category. The conventional gendered distinction between breadwinning and breadmaking needs to be updated to match the changing social reality: three decades ago, the majority of husband-wife families

were single-earner families; by 1994 this changed to become the exception, at 18% (Gunderson, 1998). Further analysis needs to be carried out to determine the extent of similarity *between* the genders and the diversity *within* the genders. It might well be that one characteristic of the growing *similarity between* the gender categories might be the *differences within* the categories. As Bakker (1996) writes "convergence of male and female labour-market experiences within what are increasingly polarized labour markets" (p. 7-8). This is not to imply that gender inequality in labour market outcomes has been eliminated, only that it might be more obscure. Vosko (2000) argues that gendered labour market inequality persists, albeit along changing axes, despite the public's increasing fixation with men's deteriorating economic situation. Historically, improvement in women's wages has been the result of unionization and public service employment, more so than comparison to men's wage gains (Kidd & Shannon, 1994). Thus, the trends of the deterioration of collective bargaining and cutbacks in the public service sector point to new patterns of gendered labour market inequality (Vosko, 2000). Further, the unemployment insurance reforms, in particular the changes in qualification to hours rather than weeks of work, have been shown to disproportionately penalize women because of their over-representation in part-time jobs. In order to thoroughly analyse the new patterns of gender inequalities amidst the structural changes in the labour market, our tools need to be better honed, more refined.

Most empirical studies of the dual labour market structure have ran aground, largely because of the circular definitions which are difficult to avoid in constructing tests of the market typology (Dickens & Lang, 1985). Nevertheless, new measures of labour market polarization are being developed (e.g. Shields & Burke, 1999) and these might prove useful in the research. Fundamental to the Segmentation Theory is the notion that jobs in the primary labour market are rationed. Thus, it is not enough to classify occupations according to segment, based on their reward structures. We also need to investigate the extent to which there are individuals working in the secondary labour market, involuntarily and with qualifications adequate for primary sector jobs. Dickens & Lang's (1985) technique to test this aspect of the segmentation theory might prove fruitful for this part of the analysis. Once adequate definitions of primary/secondary market cleavages have been developed, an empirical analysis can then be conducted using appropriate labour market variables. This would bring the necessary quantitative aspect to the discussion of where, how, and for who the Human Capital Theory operates in the Canadian labour market.

Conclusion

Neo-classical economic theory has difficulty accounting for the gender differences in returns

to human capital investments. An explanation for the portion of the wage gap which can not be explained on the basis of different human capital investments requires stepping outside the strictures of the theory. We must accept the notion that the labour market is not truly competitive. Alternatively we must accept the existence of structural barriers which result in unequal outcomes. That is, an unconstrained market produces unequal outcomes for those with equal productivity characteristics. This second theoretical concession leads directly into to the Segmentationists' hand.

Segmentation theory addresses sex-segregation in the labour market. In the initial, ground-breaking work the primary and secondary labour markets were carved out along gender lines. Simplistic assumptions, such as women being economically dependent on men, led the segmentation theorists to the faulty conclusion that women were only part of the secondary market. Gender differences in education outcomes are understood as a result of women's location in the labour market segment that does not reward educational investments. However, empirical evidence demonstrates that women are not solely located in this segment. Further, there are gender differences in pay, regardless of labour market location (Kidd & Shannon, 1994). By considering women as any other marginal group, the theory is unable to capture the conditions specific to gender relations. Thus, new theory needs to be developed to fully explain the gender differences in labour market outcomes of education. This paper argues that further empirical analysis, capturing the growing diversity of women's labour market outcomes within the aggregate patterns (Siltanen, 1994), is necessary groundwork for the ambitious project of theory construction.

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Appendix A:
Wage - determination Model, using Women-only Sub-sample.

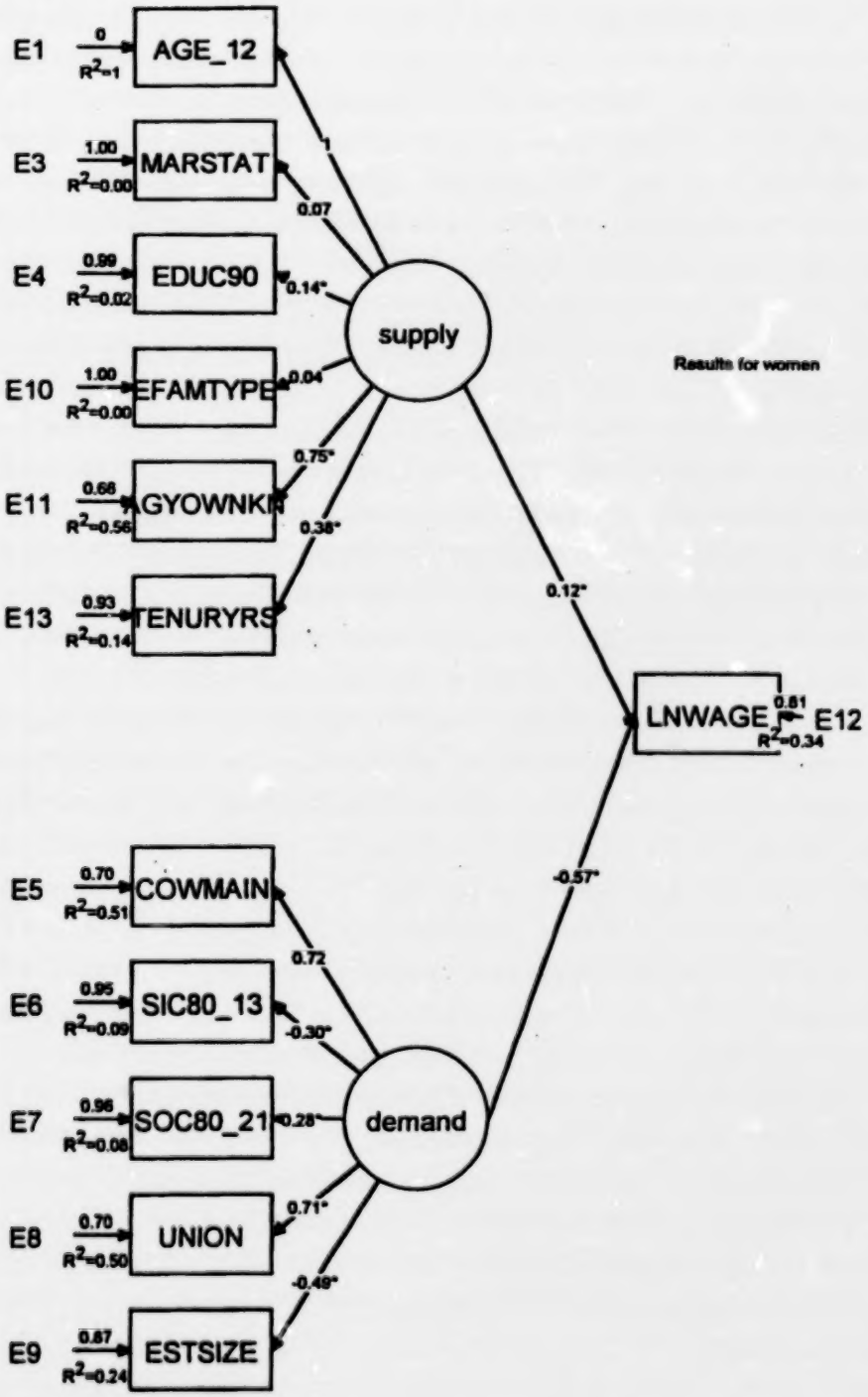

Figure X: EQS Model C:\697\GUR\LAN\MYOWNSA~1\LITER2W.EQS
Chi sq.=810.80 P=0.00 CFI=0.45 RMSEA=0.20

Appendix B:
Wage - determination Model, using Men-only Sub-sample.

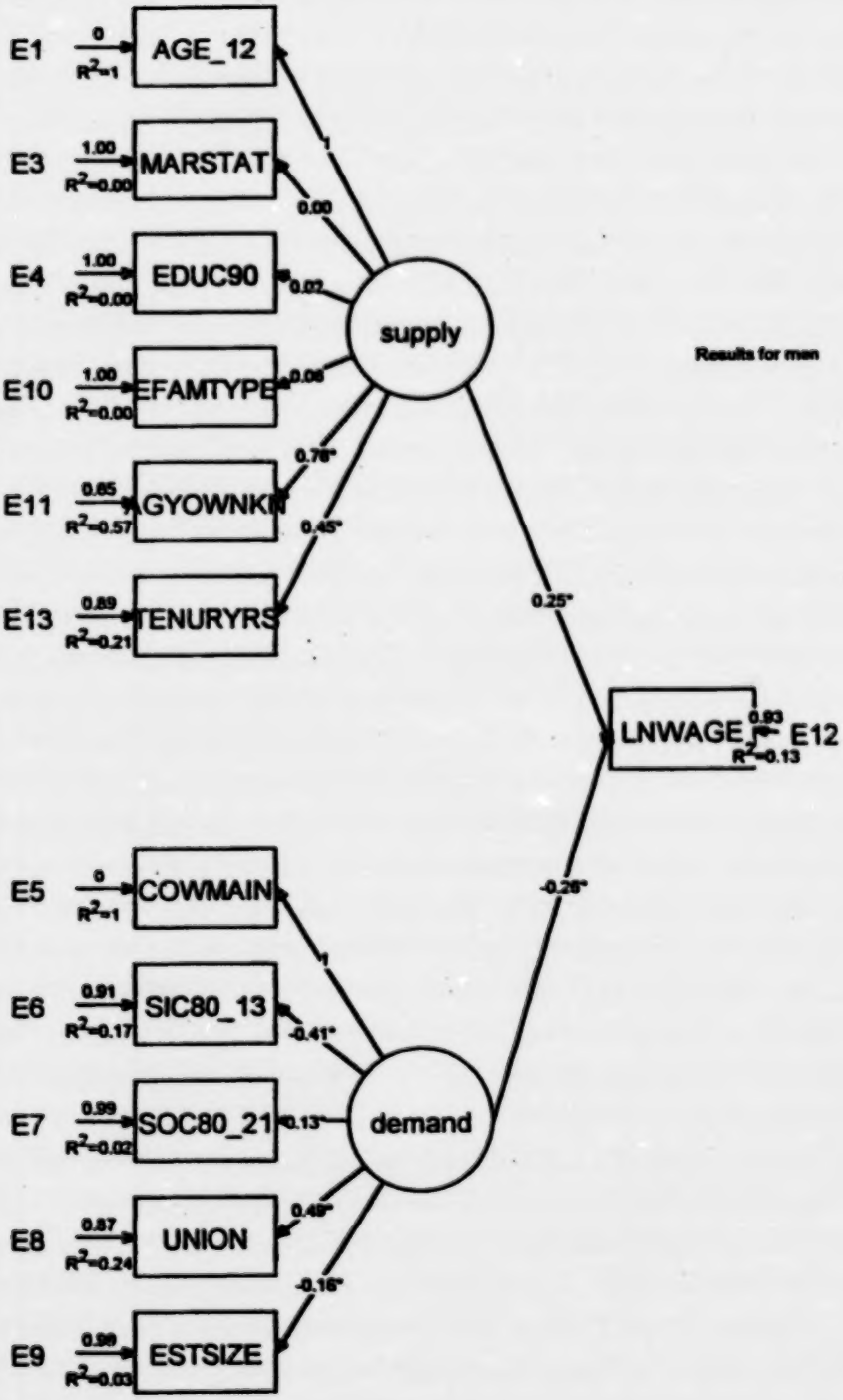

Figure X: EQS Model C:\EQS\PLANS\YOW93A~1\UTE93A.EQS
Chi sq.=[illegible] P=0.00 CFI=0.86 RMSEA=0.15

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